

USSR

KOGAN, E. A., et al, Kolloidnyy Zhurnal, Vol 32, No 3, May-Jun 70,
pp 373-376

definite length of the time of vulcanization (15-18 min); if vulcanization was continued for a time greater than the optimal, adhesion decreased because of shrinkage of the elastomer due to structuration. Use of polypropylene of different grades showed that adhesion increased with an increasing degree of atactic structure in the polypropylene, which was associated with a decrease in density. Addition to the polypropylene of carbon black in amounts $\leq 5\%$ increased adhesion, while amounts of carbon black $> 5\%$ reduced it. In the vulcanization pressure range of 1-7 kg/cm², the maximum adhesion was obtained at a pressure of 5 kg/cm². The authors thank S. S. VOYUTSKIY for his interest in the results of the work.

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1/2 033 UNCLASSIFIED PROCESSING DATE--13NOV70
TITLE--MOISTURE PERMEABILITY OF PLIED UP POLYMER MATERIALS -J-
AUTHOR-(03)-BALALAYEV, E.G., KOGAN, E.A., LOSEV, B.I.
COUNTRY OF INFO--USSR *B*
SOURCE--PLAST. MASSY 1970, (3), 43-5
DATE PUBLISHED-----70
SUBJECT AREAS--MATERIALS
TOPIC TAGS--PERMEABILITY MEASUREMENT, POLYPROPYLENE, BUTYL RUBBER,
COMPOSITE MATERIAL, WATER
CONTROL MARKING--NO RESTRICTIONS
DOCUMENT CLASS--UNCLASSIFIED
PROXY KEEL/FRAE--1999/1801 STEP NO--UR/0191/70/000/003/0043/0044
CIRC ACCESSION NO--AP0123598
UNCLASSIFIED

2/2 033

UNCLASSIFIED

PROCESSING DATE--13NOV70

CIRC ACCESSION NO--AP0123598

ABSTRACT/EXTRACT--(U) GP-O- ABSTRACT. THE H SUB2 O PERMEABILITY OF POLYPROPYLENE (I) PLIED UP WITH BUTYL RUBBER ELASTOMERS (II) WAS DETD. BY A "BEAKER" METHOD (P. TAYLOR, ET AL., 1936). THE DIFFUSION RATE OF H SUB2 O VAPORS THROUGH THE COMPOSITE MEMBRANE WAS INDEPENDENT OF THE ARRANGEMENT OF I OR II LAYERS. THE H SUB2 O PERMEABILITY OF THE COMPOSITE MATERIALS OBEYED THE DIFFUSION PRINCIPLES ESTABLISHED EARLIER FOR GASES PASSING THROUGH A 2 LAYER RUBBER, PROVIDED THERE WAS NO CHEM. REACTION BETWEEN THE POLYMER AND THE MEDIUM.

UNCLASSIFIED

1/2 016 UNCLASSIFIED PROCESSING DATE--30OCT70
TITLE--ADHESION OF THERMOPLASTS TO ELASTOMERS -U-
AUTHOR--(04)-KOGAN, E.A., LOSEV, B.I., BALALAYEV, E.G., FRIDMAN, M.L.
COUNTRY OF INFO--USSR
SOURCE--KOLLOIDNYY ZHURNAL, 1970, VOL 32, NR 3, PP 373-376
DATE PUBLISHED-----70
SUBJECT AREAS--MATERIALS
TOPIC TAGS--ADHESION, POLYPROPYLENE, THERMOPLASTIC MATERIAL, ELASTOMER
CONTROL MARKING--NO RESTRICTIONS
DOCUMENT CLASS--UNCLASSIFIED
PROXY REEL/FRAME--2000/1602 STEP NO--UR/0069/70/032/003/0373/0376
CIRC ACCESSION NO--AP0125224
UNCLASSIFIED

2/2 016

UNCLASSIFIED

PROCESSING DATE--30OCT70

CIRC ACCESSION NO--AP0125224

ABSTRACT/EXTRACT--(U) GP-0- ABSTRACT. THE EFFECT OF VARIOUS FACTORS ON THE STRENGTH OF THE ADHESION BOND BETWEEN POLYPROPYLENE AND RUBBERS HAS BEEN STUDIED. FOR ALL RUBBERS EXAMINED THE MAXIMUM ADHESION STRENGTH IS ATTAINED WITH THE CURING TIME APPROXIMATELY TWICE AS SMALL AS THAT REQUIRED FOR OPTIMUM PHYSICAL AND MECHANICAL PROPERTIES. INCREASE OF THE LAYER THICKNESS, POLARITY AND MOLECULAR WEIGHT OF RUBBERS DIMINISHES THEIR ADHESION TO NONPOLAR THERMOPLASTS. FACILITY: VNI I PROYEKTNYY INSTITUT TEPLOPROYEKT, MOSCOW. FACILITY: INSTITUT GORYUCHIKH ISKOPAYEMYKH AN SSSR, MOSCOW MOSKOVSKIY NEFTEPERATYVAYUSHCHIY ZAVOD.

UNCLASSIFIED

USSR

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~~BAKALYKHIN~~, V. A., DZHELEPOV, B. S., MEDVEDEV, A. I., TER-NERSESYANTS, V. YE.,
UCHEVATKIN, I. F., and SHESTOPALOVA, S. A., All-Union Scientific Research Institute
of Metrology imeni D. I. Mendeleyev

"On Lu¹⁶⁹ Decay"

Moscow, Izvestiya Akademii Nauk SSSR, Seriya Fizicheskaya, Vol. 34, No. 1, Jan 70,
pp 2-11

Abstract: The conversion electron spectrum of Lu¹⁶⁹ was measured on the $\pi/2$ 8-spec-
trometer of the Institute in the energy ranges 460-900 kev and 1000-1500 kev.
Several tens of new lines were observed. A table of transitions in Yb¹⁶⁹ occurring
in the decay of Lu¹⁶⁹ is compiled on the basis of these measurements and the data
of other authors and covers transition energies from 24 kev to 2300 kev. The tran-
sition energies are given together with the mean-square error, and also the inten-
sities of K-conversion electrons, data on the intensities of γ -transitions, calcu-
lated conversion coefficients, and the multipolarity. A decay scheme for Lu¹⁶⁹ is
given based on all the available data on Yb¹⁶⁹ levels.

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1/2 013 UNCLASSIFIED PROCESSING DATE--16OCT70
TITLE--EXCITATION OF LEVELS OF 633 AND 718 KEV IN THULIUM-169 DURING THE
DECAY OF YTTERBIUM-169 -U-
AUTHOR-(04)-ALEKSANDROV, V.S., BALALAYEV, V.A., DZHELEPOV, B.S.,
TERNERSESYANTS, V.YE.
COUNTRY OF INFO--USSR
SOURCE--IZV. AKAD. NAUK SSSR, SER. FIZ. 1970, 34(1), 42-53
DATE PUBLISHED-----70

SUBJECT AREAS--NUCLEAR SCIENCE AND TECHNOLOGY

TOPIC TAGS--NUCLEAR ENERGY LEVEL, EXCITED NUCLEUS, THULIUM ISOTOPE,
YTTERBIUM ISOTOPE, GAMMA SPECTRUM, GAMMA TRANSITION, BETA DECAY,
RADIOACTIVE DECAY SCHEME

CONTROL MARKING--NO RESTRICTIONS

DOCUMENT CLASS--UNCLASSIFIED
PROXY REEL/FRA--1988/0277

STEP NO--UR/0048/70/034/001/0042/0053

CIRC ACCESSION NO--AP0105351

UNCLASSIFIED

2/2 013 UNCLASSIFIED PROCESSING DATE--16OCT70
CIRC ACCESSION NO--AP0105351
ABSTRACT/EXTRACT--(U) GP-0- ABSTRACT. GAMMA SPECTRUM AND CONVERSION E OF PRIME169 YB WERE STUDIED IN THE RANGE OF SPECTRA WHERE GAMMA TRANSITIONS OF THE K PRIMEPI EQUALS 3-2 PLUS WERE EXPECTED. ELECTROLYTICALLY DEPOSITED TA WAS IRRADIATED WITH 660-MEV RHO, AND PRIME169 YB WAS SEPD. BY CHROMATOG. FROM THE TARGET LU FRACTION. INTENSITIES OF 9 NEW CONVERSION LINES WERE MEASURED AND TABULATED. OF THESE, THE 370.86-KEV LINE WERE M2, AND 494.15, 514.89, 579.41, 600.2, AND 624.58 WERE M1. THESE WERE INCLUDED IN THE REVISED DECAY SCHEME OF PRIME169 YB. THE NATURE OF THE 571.0-KEV (3-2 PLUS) LEVEL IS DISCUSSED. IT IS 3-2 PLUS (411) YIELDS UP ALTHOUGH IT IS OF MIXED NATURE, THE WAVEFUNCTION CONTG. BOTH UNIPARTICLE AND COLLECTIVE COMPONENTS. THE 571.0-, 633.03-, 718.3-, AND 825.2-KEV LEVELS OF PRIME169 TB WERE FILLED BY BETA NEGATIVE PROCESSES WITH RELATIVE ABUNDANCES OF LESS THAN 1 TIMES 10 PRIME NEGATIVE 3, 1.1 TIMES 10 PRIME NEGATIVE 2, 3.6 TIMES 10 PRIME NEGATIVE 3, AND LESS THAN 6 TIMES 10 PRIME NEGATIVE 4PERCENT, RESP. THE TOTAL DISINTEGRATION ENERGY OF PRIME169 YB WAS ESTD. TO BE 1100 PLUS OR MINUS 200 KEV. FACILITY: VSES. NAUCH.-ISSLED. INST. METROL. IM. MENDELEEVA, LENINGRAD, USSR.

UNCLASSIFIED

1/2 009 UNCLASSIFIED PROCESSING DATE--16OCT70
TITLE--DECAY OF LUTETIUM-169 -U-
AUTHOR--(05)-BALALAYEV, V.A., DZHELEPOV, B.S., MEDVEDEV, A.I.,
TERNERSEYANTS, V.YE., UCHEVATKIN, I.F.
COUNTRY OF INFO--USSR
SOURCE--IZV. AKAD. NAUK SSSR, SER. FIZ. 1970, ^B34(1), 2-11
DATE PUBLISHED-----70
SUBJECT AREAS--NUCLEAR SCIENCE AND TECHNOLOGY
TOPIC TAGS--LUTETIUM ISOTOPE, RADIOACTIVE DECAY SCHEME, CONVERSION
ELECTRON SPECTRUM
CONTROL MARKING--NO RESTRICTIONS
DOCUMENT CLASS--UNCLASSIFIED
PROXY REEL/FRAME--1988/0230 STEP NO--UR/0048/70/034/001/0002/0011
CIRC ACCESSION NO--AP0105306
UNCLASSIFIED

2/2 009

UNCLASSIFIED

PROCESSING DATE--16OCT70

CIRC ACCESSION NO--AP0105306

ABSTRACT/EXTRACT--(U) GP-0- ABSTRACT. THE SPECTRUM OF CONVERSION E FROM PRIME169 LU WAS MEASURED OVER THE 400-900 AND 1000-500 DEV RANGES. THE LU FRACTION WAS OBTAINED BY CHROMATOGRAPHIC SEPN. FROM A TA TARGET IRRADIATED WITH 660-MEV RHO. MANY NEW TRANSITIONS WERE OBSERVED, AND OTHERS WERE REFINED, ALSO IN OTHER ENERGY RANGES. IN TOTAL, 156 TRANSITIONS WERE TABULATED WITH ENERGIES RANGING FROM 24.2 TO 2296.9 KEV TOGETHER WITH INTENSITIES OF CONVERSION K E. A COMPLETE DECAY SCHEME OF PRIME169 LU IS PRESENTED. FACILITY: VSES. NAUCH.-ISSLED. INST. METROL. IM. MENDELEEVA, LENINGRAD, USSR.

UNCLASSIFIED

Aluminum and Its Alloys

USSR

UDC 669.71:548.53:534.2

BALALAYEV, Yu. F., GAPONOV, M. A., and SEMICHEV, A. N., Voronezh Polytechnical Institute

"Recrystallization and Change in Texture of Aluminum Under the Influence of Ultrasound"

Moscow, Fizika Metallov i Metallovedeniye, Vol 30, No 5, 1970, pp 1091-1093

Abstract: The specifics of the recovery, recrystallization, and texture changes in peened aluminum exposed to high plastic deformation energy density and strong thermal effects by ultrasound were studied roentgenographically. Ultrasound causes a removal of strain hardening, which may occur in several ways with various degrees of completeness, as during recrystallization. The conditions of the processes occurring during ultrasonic treatment and ordinary recrystallization differ. Ultrasound causes simultaneous deformation and annealing, whereas in recrystallization these processes occur at different times. However, this does not change the nature of the effect itself, merely its conditions and kinetics.

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USSR

UDC 534.29

BAIALAYEV, YU. F., Voronezh Polytechnic Institute

"Ultrasonic Failure of Plastic and Brittle Rods"

Moscow, Akusticheskiy Zhurnal, Vol 27, vyp 1, 71, pp 30-32

Abstract: Continuing the research begun in an earlier paper the author examines the failure of ideally elasto-plastic, quasi-brittle and brittle rods when natural longitudinal oscillations are forced in them at a frequency of about 20 kHz. The longitudinal distribution of stresses is shown on Figure 1 for the two moments of time $t_2 > t_1$. Formulas (1) gives the heat yield density at an oscillation frequency f .

Based on the theory of thermal conductivity, formula (2) is given in approximate form showing that the heat yield density is constant in a certain uniformly deformed zone 2.

Formulas (3) describes ξ_{melt} from dislocation theory.

The author then analyzes failures produced by the development of cracks and writes formulas (4) for the equation of energy balance. Though this formula is of a general nature and is usually assumed to be inapplicable for use due to its nonlocal nature, it is applicable in the case of ultrasonic

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USSR

BALALAYEV, YU. F., Akusticheskiy Zhurnal, Vol 27, vyp 1, 71, pp 30-32

failures in rods having a free end. Formulas (5) describes the energy potential concentrated at the end section prior to failure.

The experiments described herein on determining rod failure stress under longitudinal oscillations reveal the approximate amount of energy consumed in the formation of a new surface.

Thus ultrasonic rod failure offers substantial information on the structural characteristics, brittleness, plasticity, and other physico-mechanical properties of solids.

The article cites 4 literature references and contain 4 figures and 5 formulas.

2/2

Acc. Nr:

AP0048291

Abstracting Service:

CHEMICAL ABST. 5-70

Ref. Code:

UR 0472

103145s Microplastic deformation of iron and nickel under the influence of ultrasound. Balalaev, Yu. F.; Gaponov, M. A.; Postnikov, V. S. (USSR). *Fiz. Khim. Obrab. Mater.* 1970, (1), 108-13 (Russ). The microplastic deformation in Fe and Ni has been examd. as produced by ultrasound at the initial, quasi-stationary, and self-accelerating (avalanche) stages. Data are presented on the internal grain slip, grain boundary dislocation, boundary migration, and the formation of the sub-structure and new grains in these metals at a frequency of ~23 kHz and heating at 20-1000°. V. Machacek

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REEL/FRA
19792013

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1/2 030 UNCLASSIFIED PROCESSING DATE--13NOV70
TITLE--MICRODISTRIBUTION OF YTTRIUM BETWEEN PHASE AND STRUCTURAL
COMPONENTS OF CAST IRON -U-
AUTHOR--(03)-BALAN, L.N., LYUBCHENKO, A.P., MOZHAROV, M.V.
COUNTRY OF INFO--USSR
SOURCE--LITEINOE PROIZVOD. 1970, (4), 42-4
DATE PUBLISHED-----70
SUBJECT AREAS--MATERIALS
TOPIC TAGS--PHASE ANALYSIS, CAST IRON, YTTRIUM, GRAPHITE
CONTROL MARKING--NO RESTRICTIONS
DOCUMENT CLASS--UNCLASSIFIED
PROXY REEL/FRAE--3004/1931 STEP NO--UR/0128/70/000/004/0042/0044
CIRC ACCESSION NO--AP0132192
UNCLASSIFIED

2/2 030 UNCLASSIFIED PROCESSING DATE--13NOV70
CIRC ACCESSION NO--AP0132192
ABSTRACT/EXTRACT--(U) GP-0- ABSTRACT. EMPLOYED METHODS ARE DESCRIBED BY
I. L. MIRKIN ET AL. (1956), AND BY YU. N. TAKAN (1965). THE Y ADONS,
WERE VARIED 0.005-0.84PERCENT; THE GLOBULIZATION OF GRAPHITE WAS
PRODUCED ONLY AT Y 0.17-0.20PERCENT, WHILE AT Y EQUALS 0.30PERCENT
PROGRESSIVE DEGLOBULIZATION OCCURRED. THE MICRODISTRIBUTION OF Y VARIED
WITH THE RESIDUAL Y CONCN. IN THE CAST IRON: AT 0.01-0.005PERCENT Y, IT
IS LOCALIZED CLOSE TO THE COARSE PLATES OF PRIMARY GRAPHITE. AT
OPTIMAL Y CONCN. (0.21PERCENT) INCREASED Y CONCNS. ARE PRESENT CLOSE TO
GLOBULAR GRAPHITE 0.17-0.25PERCENT, AT BOUNDARIES OF FERRITE
(0.16-0.24PERCENT) AND IN PEARLITE ALONG THE BOUNDARIES OF AUSTENITE
GRAPHITE EUTECTIC COLONIES (0.27-0.47PERCENT). WITH 0.30PERCENT Y IN
CAST IRON THE Y IS LOCALIZED ALONG THE BOUNDARIES OF THE PRIMARY
AUSTENITE (0.46-0.60PERCENT). THE FORMATION OF CHEM. COMPOS. RICH IN Y
(LIKE $Fe_{23}C_6$) WAS DETD.; THESE ARE HELD RESPONSIBLE FOR THE LOWERING
OF THE CONCN. OF Y ATOMS WITHIN THE MELT.

UNCLASSIFIED

Molecular Physics

USSR

UDC: 539.219.3:669.01

ARKHANOV, V. I., Academician of the Academy of Sciences of the UkrSSR, BABOSYUK, A. L., ~~BALANAYEVA, N. O.~~, BOHOSLOVS'KYY, V. M., KOVALENKO, L. D., STAFYEYEVA, N. M., Donetsk Physicotechnical Institute, AS UkrSSR

"Investigation of the Kinetics of Growth of Layers in Two-Phase Scales"

Kiev, Dopovidi Akademii Nauk Ukrain's'koi URSR, Seriya A: Fizyko-Tekhnichni ta Matematychni Nauki, No 4, Apr 71, pp 341-344

Abstract: The authors investigate the kinetics of growth of layers of scale formed when Armco iron is oxidized at a temperature of 540°C and when cobalt is oxidized at 650°C. It is shown on the basis of experimental data that a layer of Fe_3O_4 forms when iron is oxidized in air, while the Fe_2O_3 layer on iron remains practically unchanged after a certain thickness is reached. In the case of cobalt, an increase is observed in the thickness of the Co_3O_4 layer, while the thickness of the CoO phase remains constant. These results are attributed to the imperfection of the oxides from which the scale is formed and to the collective participation of atoms in matter transfer.

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USSR

GEIVANDOV. E.A., BALANDIN. E.V.

"Automatic Indexing and Internal Organization of Chemical Structure Files in a Computer"

Moscow, Nauchno-Tekhnicheskaya Informatsiya - Seriya 2: Informatsionnyye Protsessy i Sistemy; May 1971; pp 18-23

Abstract: A new approach to the organization of the files of organic structures inside a computer is proposed that will avoid total scanning of the structures during their automatic searching (or the scanning of their filter notations).

The algorithm described in the paper: (1) assigns to each structure a set a_n^m of classificatory parameters (descriptors) which indicate the cyclic ramification of the structure, size of rings, composition of the cyclic system and the substitutes, and number of rings in the cyclic system; descriptors are calculated by a linear notation; (2) computes for each structure the class index

$$N = \sum_{i=1}^n d_i \beta_i, \quad \text{where } d_i \text{ are constants, } \beta_i = (a_n^m):$$
 in other words, the algorithm breaks down the file S of structures into N non-intersecting classes; (3) forms for every class of request x_{rp} (r is the subscript indicating the homology

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GEIVANDOV. E.A.. BALANDIN. E.V.. Moscow, Nauchno-Tekhnicheskaya Informatsiya -
Seriya 2: Informatsionnyye Protsessy i Sistemy; May 1971, pp 18-23

function; p - the class of the fragment requested) a class of related structures
 $s_{r,p} = s_a U s_b - U \dots U s_i$; $s_a, s_b, s_i \in S$. This obviates the need for storing in the comput-
er memory any additional structural data e.g., filters of structures, cross-ref-
erences, records of hierarchies of structure classes, etc.

The algorithm has been implemented on the BESM-4 computer. It takes an
average of 0.022 sec. to compute the class index by the algorithm performing op-
erations specified under items 1 and 2 above.

The formation of the classes of related structures takes an average of
0.15 sec. for one request. The computer experiment has been carried out on a
file of 433 structures and 20 search requests.

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USSR

UDC 619:616.981.42-084:636.32/.38

TRILENKO, P. A., Professor, FISHBEYN, V. Ya., Candidate of Veterinary Sciences, Leningrad Veterinary Institute, BALANDIN, F. G., Chief Veterinary Surgeon of Veterinary Division, GUKOV, A. S., Chief Veterinary Surgeon, and FOMENKO, T. V., Veterinary Surgeon of Oblast Veterinary Laboratory, Volgogradskaya Oblast

"An Experiment in Sanitation Among Flocks of Sheep for the Prevention of Brucellosis"

Moscow, Veterinariya, No 11, 1971, pp 54-55

Abstract: Because brucellosis vaccination with strain 19 produces low immunity in sheep and the antibodies developed cannot be differentiated from those produced during natural brucellosis, an experiment with live nonagglutinating vaccine from strain Br. melitensis K-24 was conducted in a sovkhos over a period of 7 years. It was established that sheep which are brucellosis carriers but do not react in tests with standard antigens, may, after vaccination with strain K-24, have agglutinins in their blood and react to the standard antigens, owing to provocation of the latent infection by the vaccinal culture. Thus, vaccine from this strain can help clear a flock of hidden brucellosis carriers, at the same time promoting greater resistance to infection among the rest of the flock. Animals reacting allergically need not be removed, as the
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TRILENKO, P. A., et al., Veterinariya, No 11, 1971, pp 54-55

K-24 vaccine also produces an allergic reorganization. As a result of systematic vaccination, isolation, and/or removal of reactive animals, coupled with other preventive measures, at the end of the experiment in 1969, an absence of brucellosis-caused abortions, practical absence of serologically reactive sheep, and marked decrease of postvaccination allergy were recorded.

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USSR

UDC 681.327

RAZUMNYI, V. T., ~~BAKANDIN, G. P.~~, PAL'CHINSKIY, V. F.

"Device for Controlling the Power Supply and for the Control of a Digital Computer"

Patent No. 327483 (1327286/18-24 from 5 May 1969), Class G 06f 15/46, G 01r 31/28, announced by the Institute of Mining Mechanics and Technical Cybernetics imeni M. M. Fedorov (from Otkrytiya, izobreteniya, promyshlennyye obraztsy, tovarnyye znaki, No. 5, 1972, p 141)

Abstract: A device for the control of the power supply, memory capacitors, and the circuit for controlling emergency operations and automatic starting of a computer and a coincidence circuit are described; they are distinguished by the fact that in order to raise control reliability the memory capacitors in it are connected with the input circuits for observing the loss of power. The outputs of these circuits are connected to the inputs of the coincidence circuits, and the output of the coincidence circuit is connected with the circuits for controlling emergency operations and automatic startup of the computer.

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1/2 027 UNCLASSIFIED PROCESSING DATE--23OCT70
TITLE--AMOUNT OF GAS SWELLING IN IRRADIATED BERYLLIUM OXIDE -U-

AUTHOR--(03)-KHUDYAKOV, A.V., SUDAKOVA, N.V., BALANDIN, G.S.

COUNTRY OF INFO--USSR

SOURCE--AT. ENERG. 1970, 28(2), 157-9

DATE PUBLISHED-----70

SUBJECT AREAS--CHEMISTRY, MATERIALS

TOPIC TAGS--BERYLLIUM OXIDE, IRRADIATION, HELIUM, POROSITY

CONTROL MARKING--NO RESTRICTIONS

DOCUMENT CLASS--UNCLASSIFIED
PROXY REEL/FRAE--1997/1575

STEP NO--UR/0089/70/023/002/0157/0159

CIRC ACCESSION NO--AP0120354

UNCLASSIFIED

2/2 027

UNCLASSIFIED

PROCESSING DATE--23OCT7

CIRC ACCESSION NO--AP0120354

ABSTRACT/EXTRACT--(U) GP-0- ABSTRACT. IRRADN. OF COLD PRESSED AND SINTERED BEO (D. 2.8 G-CM PRIME3 AND MEAN GRAIN SIZE 35 MU) WITH AN INTEGRATED DOSE OF 5 TIMES 10 PRIME20 GREATER THAN OR EQUAL TO 1-MEV N, AT 70DEGREES SHOWED NO MICROCRACKS AND PRACTICALLY NO INCREASE IN TOTAL POROSITY, WHICH WAS 8.3-9.9PERCENT. ANNEALING OF THE IRRADIATED BEO FO 15-225 HR AT 1500DEGREES INCREASED THE POROSITY TO 11.0-12.5PERCENT; NO SUCH INCREASE IN POROSITY WAS OBSD. ON ANNEALING NONIRRADIATED SAMPLES. THE INCREASE IN POROSITY WAS ASSOCD. MAINLY WITH THE FORMATION OF INTERGRANULAR POROSITY; THE OPEN POROSITY ACTUALLY DECREASED FROM 1.9PERCENT IN NONIRRADIATED SAMPLES TO 0.86PERCENT IN IRRADIATED SAMPLE AND 0.4PERCENT IN IRRADIATED AND ANNEALED SAMPLES. THE MEAN SIZE OF HE PORES (WHICH OCCUPIED SIMILAR TO 1PERCENT OF THE TOTAL VOL. OF IRRADIATED AND ANNEALED SAMPLES) WAS 0.6-0.7 MU.

UNCLASSIFIED

USSR

SOLOV'YEV, V. D., BALANDIN, I. G., Kletka i virus, Meditsina, 1973, 192 pp

RNA-dependent RNA-polymerase (RNA-synthetase) and the synthesis of viral RNA	79
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USSR

UDC 576.858.23(Coxsackie)+576.858.17.083.35

SOVETOVA, G. P., MARCHENKO, B. I., AMCHENKOVA, A. M., BALANDIN, I. G., and LUSHNIKOV, A. A., Institute of Epidemiology and Microbiology imeni N. F. Gamaleya, USSR Academy of Medical Sciences, Moscow

"Chronic Virus Infection in Transplanted Cultures of Human Leukemia Cells (J-96) and Mouse Fibroblasts (L) Produced by Inoculation of Cultures with Coxsackie B₅ and Vesicular Stomatitis Viruses in the Presence of Antisera to the Infected Cell"

Moscow, Voprosy Virusologii, No 1, Jan/Feb 71, pp 10-16

Abstract: In order to evaluate the significance of antiviral antibodies in the development of chronic infection, it is necessary to study them in combination with other immunological factors under natural conditions. Consequently a serum against the infected cells was used to produce chronic infection in a tissue culture. J-96 cell cultures were inoculated with Coxsackie B₅ virus and L cells with vesicular stomatitis virus, and then cultured in the presence of antisera against the infected cells. In 7 of 14 tests with J-96 cultures and in 3 of 4 tests with L cultures, cell strains with properties differing sharply from the original ones were obtained. Starting with the 9th passage, when the cultures were no longer treated with the 1/2

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USSR

SOVETOVA, G. P., et al., Voprosy Virusologii, No 1, Jan/Feb 71, pp 10-16

antiserum, and for the remaining observation period (22-48 passages), the cell cultures did not degenerate. The respective viruses were detected in all cell strains. Cytophysiological, morphological, and cytochemical studies were performed, the content of acid-soluble proteins in the various cell cultures, and succinate dehydrogenase activity in tissue culture cells were determined. During the entire observation period, chronic infection never became acute even when no antiserum was in the culture medium. The cultures were highly resistant to superinfection and differed from normal cultures by a considerably reduced content of acid-soluble proteins and by their cytomorphological and histochemical properties.

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USSR

UDC 621.396.933.2

BALANDIN, V. I., KIYLO, L. E., OKEANOV, Ye. N., KHOSID, S. R.

"An Automatic Keyer"

Moscow, Otkrytiya, izobreteniya, promyshlennyye obraztsy, tovarnyye znaki, 1970, No 33, Soviet Patent No 285067, class 21, filed 29 Aug 68, published 29 Oct 70, p 46

Translation: This Author's Certificate introduces an automatic keyer which contains a cadence pulse generator with frequency divider, a programmed decoder, a trigger-type direction-finding signal shaper, a reset circuit, an OR circuit with output connected to a switch in the supply circuit of the recognition signal decoder, a controlling device, and an output amplifier. As a distinguishing feature of the patent, to ensure universality in shaping the call signal and in the modes of operation, the keyer contains an additional OR circuit connected between the outputs of the recognition signal decoder and the input of the controlling device, as well as a mode switch whose inputs are connected to the programmed decoder while the outputs are connected to the above-mentioned controlling device and the reset circuit.

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USSR

UDC 621.396.67:624.074

SOKOLOV, A. Ya., D'YACHKOV, V. K., GOL'DYAYEV, K. Ya., BALANDIN, V. V.

"A Device for Limiting the Angle of Turn of an Antenna Mast "

USSR Author's Certificate No 255375, Filed 19 Jun 68, published 8 Apr 70 from
RZh-Radiotekhnika, No 10, Oct 70, Abstract No 10B94 P)

Translation: The proposed device for limiting the angle of turn of an antenna mast contains shock absorbers and a stopper mechanism made in the form of a threaded ring which is fitted on the faces with teeth which mesh at the extreme positions of the column with teeth on the support rings. To simplify the design and reduce the overall dimensions of the device, the threaded ring is rigidly fastened inside a yoke which is fixed by hinge fastening to the stationary base of the antenna mast through the shock absorbers. Two illustrations.

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1/2 021
UNCLASSIFIED
PROCESSING DATE--23OCT70
TITLE--REGENERATION OF ALUMINA NICKEL TUNGSTEN SULFIDE HYDROGENATION
CATALYSTS -U-
AUTHOR-(03)-VALITOV, N.KH., PANCHENKOV, G.M., BALANDINA, K.L.
COUNTRY OF INFO--USSR
SOURCE--NEFIEPERERAB. NEFTEKHIM. MOSCOW, 1970, (3), 8-9
DATE PUBLISHED-----70
SUBJECT AREAS--CHEMISTRY
TOPIC TAGS--CATALYST REGENERATION, CATALYTIC HYDROGENATION, NICKEL
SULFIDE, TUNGSTEN COMPOUND, SULFIDE CATALYST, COKE, GRAPHITE, PETROLEUM
FRACTION
CONTROL MARKING--NO RESTRICTIONS
DOCUMENT CLASS--UNCLASSIFIED
PROXY REEL/FRAHE--1997/0644
STEP NO--UR/0315/70/000/003/0008/0009
CIRC ACCESSION NO--AP0119556
UNCLASSIFIED

2/2 021

UNCLASSIFIED

PROCESSING DATE--23OCT70

CIRC ACCESSION NO--AP0119556

ABSTRACT/EXTRACT--(U) GP-0-

ABSTRACT. REGENERATION OF A (NIS-WS SUB2)-AL
SUB2 O SUB3 HYDROGENATION CATALYST BY BURNING OFF THE COKE AND EXCESS S,
REMOVING SURFACE LAYERS OF FE, V, AND AS COMPOS. IN A BALL MILL,
GRINDING THE PELLETS TO 315 MU PARTICLE SIZE, MIXING THE RESULTING
POWDER WITH GRAPHITE, PELLETIZING THE MIXT., AND SULFIDIZING IT TO
7PERCENT S CONTENT RESTORED ALMOST ALL OF THE ORIGINAL ACTIVITY. BY
HYDROGENATING A STRAIGHT DISTN. 153-253DEGREES KEROSENE FRACTION
INTRODUCED AT 140 ML-HR WITH 70 L. H-HR ON 94 G OF FRESH AND
REGENERATED CATALYSTS, RESP., AT 300 PLUS OR MINUS 10 ATM AND 360 PLUS
OR MINUS 1.5DEGREES, THE TOTAL S CONTENT WAS REDUCED FROM 0.63
(20PERCENT SULFURIZING) TO 0.022 AND 0.026PERCENT (3 AND 4PERCENT
SULFURIZING). FACILITY: MINKHGP IM. GUBKINA, MOSCOW, USSR.

UNCLASSIFIED

USSR

UDC 576.858.23(Coxsackie)

YAVOROVSKAYA, V. YE., BALANDINA, A. M., and GICHEVA, T. A., Medical Institute
Novosibirsk

"A Study of Some Genetic Traits of Coxsackie A13 and A18 Viruses Circulating
Under Natural Conditions. A Study of Reproductive Activity and Thermal
Resistance"

Moscow, Voprosy Virusologii, No 4, Jul/Aug 1972, pp 480-482

Abstract: Genetic traits of wild Coxsackie A13 and A18 viruses were compared with those of viruses obtained from rheumatic patients in order to reveal any possibilities for differentiating between these groups of viruses. Results indicated that traits describing thermal resistance are identical for almost all 11 strains investigated. All viruses had reduced reproduction at 24°C and were relatively unaffected at 40°C. At 32°C 2 subgroups had relatively unaffected reproduction and 1 revealed reduced reproduction. Heating for 1 hour at 50 and 56°C decreased reproduction of all strains. Thermal resistance in the presence of Mg^{2+} was relatively unaffected, while heating at 50°C at pH 2.0 and 12.0 reduced thermal resistance of all strains. Basic medium had a more rapid inactivating effect than acid medium. Similarity in thermal resistance responses prevents employment of these traits for differentiating the strains tested.

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USSR

UDC: 681.3.001:518.5

BALANDINA, N. A.

"An Operator System of Programming. Part 2. (Application to Problem of Set Semantic Synthesis)"

Nekotor. Vopr. Avtomatiz. Programmir [Some problems of automation of programming -- collection of works], Novosibirsk, Nauka Press, 1970, pp 38-68(translated from Referativnyy Zhurnal Avtomatika, Telemekhanika I Vychislitel'naya Tekhnika, No 3, 1971, Abstract No 3 B76 by V. Zh.)

Translation: An example of utilization of an operator system of programming (OSP) for solution of a problem of set semantic synthesis is presented: namely, an investigation of the applicability of a fixed rule to a fixed unit of lexical-syntactic structure (reduced to a study of imbedability of a subtree in a tree) and performance of conversions indicated in the rule in the case of applicability of the rule. Assignment of the initial information in the form of tables is studied. A description of the component operators of the algorithm is presented. 3 biblio. refs.

1/1

- 49 -

USSR

UDC: 681.3.001:518.5

BALANDINA, N.A.

"An Operator System of Programming. Part 1. General Descriptions"

Nekotor. Vopr. Avtomatiz. Programmir [Some problems of automation of programming -- collection of works], Novosibirsk, Nauka Press, 1970, pp 6-37 (translated from Referativnyy Zhurnal Avtomatika, Telemekhanika i Vychislitel'naya Tekhnika, No. 3, 1971, Abstract No. 3B75 by V.Zh.).

Translation: A description of an operator system of programming (OSP), designed for description of logical problems is presented. To operate the OSP an algorithm is written in a special form as a numbered sequence of operators, represented by their "caps," indicating the number of the operator in the operator inscription, its type, the specific values of the parameters, and the number of the operator to which a transfer must be made after performance of the operator in question. Operators are used in the organization of information, the organization of the operator description, arithmetic and logic operations, operations with matrices in machine memory, operations with tables, formation of a composite operator, output of results, as well as special operations. The

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USSR

UDC: 681.3.001:518.5

BALANDINA. N.A.. Nekotor. Vopr. Avtomatiz. Programmir, Novosibirsk, Nauka Press, 1970, pp 6-37.

author presents a description of the tabular method of assignment of information, a significant description of operations performed by operators, a description of the work of an operator and reference tables used in the operation of a translator, a description of a program for development of an algorithm (tracing the operation of the algorithm on the basis of its graph diagram), and also a description of the realization of the OSP on the BESM-6 computer. A simplified version of the OSP was realized on the Ural-4 computer. 5 biblio. refs.

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BALANDINA, N. A.

"One Operational Programming System. One. General Description"

Nekotor. Vopr. Avtomatiz. Programmir., [Some Problems of Automation of Programming], Novosibirsk, Nauka Press, 1970, pp 6-37, (Translated from Referativnyy Zhurnal Kibernetika, No 5, 1971, Abstract No. 5V645 by V. V'yachenko).

Translation: An operator system of programming (OSP) is suggested, allowing the programs of logic problems to be described. The list of operators in the OSP allows information recorded in the form of tables to be processed. Processing of table rows, entire tables and sets of tables is allowed. Among the operators there are simple and combined operators. The simple operators are realized by some routines, the combined operators, like the algorithms, are fixed by operator descriptions. The OSP is designed for programmers. A detailed description of the tabular method of recording information, operators and operator descriptions is presented, as well as a description of the actions performed by operators, a description of the operation of the interpreter, programs for development of algorithms and a description of the realization of OSP for the BESM-6 computer. An appendix presents the operator description of the component operators.

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USSR

UDC 681.3.06:51

ANTONENKO, M. G., KOZHURIN, F. D., SHVETS, N. Ya., ZATINATSKIY, P. A.,
BALANDINA, Zh. I.

"One Method for Input of Information Files to Data Processing Systems"

Tsifr. Vychisl. Tekhnika i Programmir. [Digital Computer Equipment and Programming -- Collection of Works], No 6, Moscow, Sovetskoye Radio Press, 1971, pp 161-168, (Translated from Referativnyy Zhurnal, Kibernetika, No 6, 1971, Abstract No 6 V003 by the authors).

Translation: Problems are analyzed, related to the organization and input of information files to modern data processing systems. One method of external sorting is presented -- the method of characteristic phrases. Two algorithms are presented, based on the utilization of the ideas of the method of characteristic phrases. Formulas are produced for calculation of the number of runs through a file being sorted. The area of effective utilization of the algorithms is defined.

1/2 047

UNCLASSIFIED

PROCESSING DATE--30OCT70

TITLE--INVESTIGATION OF THE APPARENT MASS OF A SUPERSONIC JET EXPELLED
FROM A NOZZLE FOR INCALCULABLE FLOW REGIMES -U-

AUTHOR--BALANIN, B.A.

COUNTRY OF INFO--USSR

SOURCE--INZHENERNO-FIZICHESKII ZHURNAL, VOL. 18, MAR. 1970, P. 453-458

DATE PUBLISHED-----70

SUBJECT AREAS--PHYSICS

TOPIC TAGS--JET FLOW, SUPERSONIC FLOW, AIR FLOW, NOZZLE FLOW, FLOW
MEASUREMENT

CONTROL MARKING--NO RESTRICTIONS

DOCUMENT CLASS--UNCLASSIFIED

PROXY REEL/FRA--1996/1441

STEP NO--UR/0170/70/018/000/0453/0458

CIRC ACCESSION NO--AP0118430

UNCLASSIFIED

2/2 047

UNCLASSIFIED

PROCESSING DATE--30OCT70

CIRC ACCESSION NO--AP0118430

ABSTRACT/EXTRACT--(U) GP-0- ABSTRACT. EXPERIMENTAL INVESTIGATION OF THE APPARENT MASS (THE DIFFERENCE BETWEEN THE FLOW RATE AT A CERTAIN CROSS SECTION OF THE JET AND THAT INSIDE THE NOZZLE) OF AN "INCALCULABLE" SUPERSONIC JET. THE DIFFICULTIES INVOLVED IN THE DIRECT MEASUREMENT OF THE APPARENT MASS WERE MINIMIZED BY MEASURING THE FLOW RATE OF AN AIR FLOW THROUGH A TUBE. THE RELIABILITY OF THE RESULTS WAS INCREASED BY USING TWO DIFFERENT MEASURING TECHNIQUES. THE DEPENDENCE OF THE APPARENT MASS ON THE MACH NUMBER AT THE NOZZLE EXIT SECTION AND ON THE DISTANCE FROM THE NOZZLE EXIT SECTION IS DETERMINED, AND EMPIRICAL FORMULAS DESCRIBING THESE RELATIONS ARE PROPOSED. FACILITY: Leningradskii Gosudarstvennyi Universitet, Leningrad, USSR.

UNCLASSIFIED

Acc. Nr:

AP0036815

13 Ref. Code: UR 0016

PRIMARY SOURCE: Zhurnal Mikrobiologii, Epidemiologii, i
Immunobiologii, 1970, Nr 1, pp 47-53

THE EFFECT OF DNA INHIBITORS ON THE TRANSFER
OF COLICINOGENIC FACTOR I IN SALMONELLA TYPHIMURIUM

V. G. Likhoded, A. Z. Smolenskaya, T. V. Perova, N. V. Balanin

5-fluorouracil, methothrexate, mitomycin C and nalidixic acid proved to inhibit the transfer of colicinogenic factor I during conjugation in *S. typhimurium*. It was shown that nalidixic acid did not influence the formation of effective contacts and did not kill the auxotrophic bacteria in the synthetic medium, but sharply reduced the colicinogenic transfer. However, the transfer of colicinogenic factor in some of the cells did not depend on DNA synthesis and failed to be depressed by nalidixic acid. It is suggested that the transfer of colicinogenic factor I during conjugation began after completion of its replication.

D. n.

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USSR

UDC: 621.317.764.023

BALANOV, A. T. and VITEVSKIY, V. B.

"Computing the Input Current of a Hall Sensor in the Pulse Mode"

V so. Radioelektron. v nar. kn-ve SSSR, Ch. 2 (Radioelectronics in the National Economy of the USSR, Part 2--collection of series)
Kuybyshev, 1976, pp 118-122 (from Radiotekhnika, No. 3, March 71, Abstract No. 31371)

Translation: The use of the Hall sensor in measuring the power in pulses is discussed. The advantages (for increased output signal) of higher input sensor current than the specified value, usually indicated for direct current, is noted. On the basis of two initial conditions -- the permissible temperature of the sensor and the permissible drop in the output signal plateau -- a detailed computation is made, from which the formula for the input current is obtained. Bibliography of three. L. L.

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USSR

USSR

UDC: 621.395.385.2

BALANOV, A. T., Kyrbyshev Electrical Engineering Institute of Communications

"A Compressor-Extender"

Moscow, Otkrytiya, izobreteniya, promyshlennyye obraztsy, tovarnyye znaki,
No 18, Jun 71, Author's Certificate No 305592, Division H, filed 4 Dec 68,
published 4 Jun 71, p 195

Translation: This Author's Certificate introduces a dynamic range compressor-extender for transmitted signals. The device contains a rectifier, filter, delay voltage source, DC amplifier, electromagnet, Hall pickup, subtractor and transmission channel amplifier. As a distinguishing feature of the patent, the degree of compression and extension of the dynamic range is increased to a factor of 3, 4, ... n by connecting a buffer amplifier, rectifier, filter, DC amplifier and electromagnet in series to the output of the above-mentioned transmission channel amplifier, and connecting a network made up of (n-2) links in the form of series-connected Hall pickups and amplifiers between the buffer amplifier and the rectifier of the magnetic control channel.

1/1

1/2 028 UNCLASSIFIED PROCESSING DATE--04DEC70
TITLE--SUPERCONDUCTOR NORMAL METAL SUPERCONDUCTOR SUPERCONDUCTING POINT
CONTACTS -U-
AUTHOR-(03)-BONDARENKO, S.I., DMIIRENKO, I.M., BALANOV, E.I.
COUNTRY OF INFO--USSR
SOURCE--FIZ. TVERD. TELA 1970, 12(5), 1417-22
DATE PUBLISHED-----70
SUBJECT AREAS--ELECTRONICS AND ELECTRICAL ENGR., PHYSICS
TOPIC TAGS--SUPERCONDUCTOR, CONTACT RESISTANCE, RESONATOR, VOLT AMPERE
CHARACTERISTIC
CONTROL MARKING--NO RESTRICTIONS
DOCUMENT CLASS--UNCLASSIFIED
PROXY REEL/FRA--3005/0972 STEP NO--UR/0181/70/012/005/1417/1422
CIRC ACCESSION NO--AT0133058
UNCLASSIFIED

2/2 028

UNCLASSIFIED

PROCESSING DATE--04DEC70

CIRC ACCESSION NO--AT0133058

ABSTRACT/EXTRACT--(U) GP-0- ABSTRACT. THE PECULIARITIES WERE STUDIED OF THE STEADY STATE AND UNSTEADY STATE JOSEPHSON EFFECTS IN THE SUPERCONDUCTOR NORMAL METAL SUPERCONDUCTOR (S-N-S) POINT CONTACTS TA-AG-SN AND SN-AG-SN: DEPENDENCES OF THE CRIT. CURRENTS OF CONTACTS, I_{0TA} SUBC, ON THEIR NORMAL RESISTANCE, R_{SUBN} , TEMP. τ , THICKNESS OF THE LAYER OF NORMAL METAL d , THE EFFECTS OF RESISTANCE AND THICKNESS ON THE CRIT. TEMP. OF CONTACTS τ SUBC AND THE CONDITIONS OF OBSERVATION OF INTRINSIC CURRENT STEPS ON VOLT AMPERE CHARACTERISTICS OF THE CONTACTS LOCATED IN A SUPERCONDUCTING RESONATOR. AN EMPIRICAL FORMULA WAS OBTAINED FOR THE CRIT. FIELD; THE DEPENDENCE OBTAINED CORRESPONDS WELL TO THE THEORY OF THE PROXIMITY EFFECT IN THE SYSTEMS S-N-S IN THE LIMIT (SHOWN ON MICROFICHE) (I_{0TA} IS THE FREE PATH LENGTH AND (SHOWN ON MICROFICHE) WHERE ϵ_{SUBF} IS THE FERMI VELOCITY). FACILITY: FIZ.-TEKH. INST. NIZKIKH TEMP., KHARKOV, USSR.

UNCLASSIFIED

1/2 019 UNCLASSIFIED PROCESSING DATE--30OCT70
TITLE--CHEMILUMINESCENCE AND KINETICS OF TETRALINE OXIDATION IN ACETIC
ACID CATALYZED BY COBALT ACETATE AND SODIUM BROMIDE -U-
AUTHOR--(03)--ZAKHAROV, I.V., BALANOV, L.A., POPOVA, O.G.
COUNTRY OF INFO--USSR
SOURCE--DOKL. AKAD. NAUK SSSR 1970, 190(5), 1132-5
DATE PUBLISHED--70
SUBJECT AREAS--CHEMISTRY
TOPIC TAGS--CHEMILUMINESCENCE, PEROXIDE, METAL COMPLEX COMPOUND,
NAPHTHALENE, ORGANOCOBLALT COMPOUND, SODIUM COMPOUND, BROMIDE, OXIDATION
CENTREL MARKING--NO RESTRICTIONS
DOCUMENT CLASS--UNCLASSIFIED
PROXY REEL/FRAME--3001/0041 STEP NO--UR/0020/70/190/005/1132/1135
CIRC ACCESSION NO--AT0125877
UNCLASSIFIED

2/2 019

UNCLASSIFIED

PROCESSING DATE--30OCT70

CIRC ACCESSION NO--AT0125877

ABSTRACT/EXTRACT--(U) GP-0- ABSTRACT. KINETIC CURVES WERE SHOWN FOR CONSUMPTION OF O AND FOR PRODUCTION OF CHEMILUMINESCENCE IN THE TITLE REACTION 50-60DEGREES UNDER VARIOUS CONDITIONS. ADDED NABR NOT ONLY ENHANCED CHEMILUMINESCENCE BUT ALSO ACCELERATED THE UPTAKE OF O AND AT NABR CONC. UP TO 0.5 RELATIVE TO CO(OAC) SUB2, THE INTENSITY OF CHEMILUMINESCENCE IS NEARLY PROPORTIONAL TO THE RATE OF OXIDN. TETRAHYDRONAPHTHALENE (I) CONC. AFFECTS THE RATE OF OXIDN. WHICH FOLLOWS A SQUARE ROOT LAW IN THE ABSENCE OF NABR; IN THE PRESENCE OF NABR, ON DECREASING CONC. OF I THE RATE OF OXIDN. TENDS TO REACH A CONST. VALUE DEPENDENT CN CO(OAC) SUB2 AND NABR CONCNS. THE SAME APPLIES TO INTENSITY OF LUMINESCENCE. WITH A MUCH GREATER AMT. OF CO(OAC) SUB2 THAN NABR IN THE SYSTEM, THE RATE OF OXIDN. REACHES A CONST. VALUE AND DOES NOT CHANGE AFTER FURTHER INCREASE OF ADDED SALT, AS EVIDENTLY ALL NABR IS BOUND AS CO MONOBROMIDE. EVIDENTLY THE EXPECTED METATHETIC REACTION EQUIL. OF NABR AND CO(OAC) SUB2 DOES EXIST IN THE SYSTEM AND COBROAC IS ACTIVE IN CHAIN PROPAGATION WHILE COHBR PRIME POSITIVE POSITIVE TAKES PART IN CHAIN BRANCHING. THE CHAIN INITIATION REACTIONS ARE GIVEN. THE USUAL CHAIN PROPAGATION AND TERMINATION STEPS ARE DISCUSSED. THE OVERALL REACTION IS AUTOXIDN. WITH 2 PATHS FOR FORMATION OF PEROXIDE: FROM HYDROCARBON AND PEROXIDIC RADICALS, AND FROM PEROXIDIC RADICAL AND THE HBR COMPLEX WITH THE METAL SALT. FACILITY: MOSK. FIZ.-TEKH. INST., MOSCOW, USSR.

UNCLASSIFIED

USSR

UDC 612.821.4

KARAMYAN, A. I., SOLLEPTINSKAYA, T. N., and BALANOV, L. Ya., Institute of Evolutional Physiology and Biochemistry imeni I. M. Sechenov, Academy of Sciences USSR, Leningrad

"An Electrophysiological Analysis of the Psycholytic Action of Chlorpromazine and Barbamil"

Yerevan, Biologicheskii Zhurnal Armenii, Vol 25, No 6-7, Jun/Jul 72, pp 80-94

Abstract: Effects of chlorpromazine and barbamil on deep brain structures were studied on rabbits. Preliminary electrostimulation tests demonstrated that stimulation of the posterior and anterior hypothalamus, the reticular formation, and thalamic nuclei produced generalized exaltative reactions in the cortex specific to the particular formation stimulated. Moreover it was found that the nature of the reaction depends on the activity level of these structures. For example, stimulation of the reticular formation and posterior hypothalamus after prior, repeated stimulation of the anterior hypothalamus produces a reaction characteristic to stimulation of the anterior hypothalamus. Tests with the drugs themselves showed that chlorpromazine increases the activity of the anterior hypothalamus, causing diffuse inhibition of the brain's nonspecific systems: It decreases the activity of the brain stem reticular

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USSR

KARAMYAN, A. I., et al., Biologicheskii Zhurnal Armenii, Vol 25, No 6-7, Jun/Jul 72, pp 80-94

formation, posterior hypothalamus, nonspecific thalamic nuclei, and caudate nuclei. Barbamil activates nonspecific thalamic systems and caudate nuclei, producing differential effects on brain activity: It decreases the activity of the brain stem reticular formation and posterior hypothalamus, blocks their communication with the neocortex, increases the activity of nonspecific thalamic nuclei and caudate nuclei, and facilitates pulse transmission both ways along corticothalamic routes. In both cases the affected structure dominates in response production as was noted with electrostimulation. Such changes in the source of generalized effects on the brain produced by the drugs are also reflected in changes of background activity and the nature of cortical reactions to afferent stimuli. For example in the presence of chlorpromazine, light, acoustic, and olfactory stimuli cause desynchronization of high-amplitude irregular slow waves, which is a reaction characteristic of a sensitized anterior hypothalamus. The animal's emotional responses to chlorpromazine and barbamil are identical to those produced by stimulating, respectively, the anterior hypothalamus on one hand and the nonspecific thalamic systems and caudate nuclei on the other. A comparison of these results with data obtained on human reactions supports the suggestion that when particular deep brain

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USSR

KARAMYAN, A. I., et al., Biologicheskii Zhurnal Armenii, Vol 25, No 6-7, Jun/
Jul 72, pp 80-94

structures are activated, they dominate other structures in affecting the cerebral cortex, causing particular emotional and behavioral responses. This study indicates the usefulness of employing psycholytic drugs in demonstrating the function of deep brain structures.

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USSR

UDC: 8.72

BALASANOV, G. N.

"Modeling and Optimization in Automated Control Systems (Problems of Developing Automatic Systems for Controlling Continuous Plants With Practical Examples Taken From Hydrometallurgy of Rare and Radioactive Metals)"

Modelirovaniye i optimizatsiya v avtomatizirovannykh sistemakh upravleniya (voprosy razrabotki ASU nepreryvnymi proizvodstvenimi s prakticheskimi primerami odnosyashchimisya k gidrometallurgii redkikh i radioaktivnykh metallov) (cf. English above), Moscow, Atomizdat, 1972, 290 pp, ill. 3 r. 52 k. (from RZh-Kibernetika, No 6, Jun 72, Abstract No 6V502 K)

[No abstract]

1/1

- 45 -

USSR

UDC 616.932-03-036.8:612.013.1

NIKIFOROV, V. N., POKROVSKIY, V. I., BULYCHEV, V. V., MALEYEV, V. V.,
KUPRIYCHUK, A. B., KUCHEROVA, T. P., BALASHEV, V. I., KOL'YAKOVA, T. A.,
and VEYUR, N. A., Scientific Research Institute of Epidemiology, Ministry
of Health USSR

"Restoration of Homeostasis in Cholera Patients Receiving Rehydration Therapy"

Moscow, Sovetskaya Meditsina, No 9, 1971, pp 114-120

Abstract: Normalization of disturbances of homeostasis in cholera patients is achieved by careful monitoring of the effects of rehydration therapy. Various indices of homeostasis -- physicochemical properties of the blood, acid-base equilibrium of arterial and venous blood, clotting, etc. -- were investigated in 58 patients with Asiatic cholera before and during rehydration with the standard No 1 solution (5 g NaCl, 4 g NaHCO₃, and 1 g KCl per liter of apyrogenic water). The disturbance of homeostasis before treatment was marked by increased specific gravity of plasma, viscosity, and hematocrit and decreased volume of circulating plasma. Changes in the acid-base equilibrium and blood gases were manifested by signs of compensated respiratory alkalosis, metabolic compensated acidosis, and stagnant hypoxemia. Disruption of the movement of blood electrolytes was accompanied by decreased concentration of potassium,
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USSR

NIKIFOROV, V. N., et al., Sovetskaya Meditsina, No 9, 1971, pp 114-120

sodium, and chlorine. Fibrinolysis, clotting, recalcification, and heparin time increased while the prothrombin index and fibrinogen increased.

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USSR

UDC 550.834.05

BALASHKAND, M. I., SHEVELEV, V. A., TETERIN, A. I., MIKHEYEVA, L. V.,
MAYOROV, V. V., LOVLYA, S. A., Ramenskoye Department of the All-Union
Scientific Research Institute of Geophysics

"A Gas Detonation Installation"

Moscow, Otkrytiya, Izobreteniya, Promyshlennyye Obratzys, Tovarnyye Znaki,
No 2, Jan 73, Author's Certificate No 362131, Division G, filed 24 Aug 67,
published 13 Dec 72, p 74

Translation: This Author's Certificate introduces a gas detonation installation consisting of tanks with oxidizer and fuel, measuring vessels, a detonation head, an explosive chamber, an exhaust chamber, electromagnetic valves, tubing, pipelines, and a unit for controlling the electromagnetic valve system. As a distinguishing feature of the patent, the reliability of explosion cutoff is improved by making the explosive detonation head in the form of cavities separated by valves. One of the cavities is equipped with a device for igniting the gas mixture, and is connected to the explosion chamber by a channel with check valve.

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USSR

UDC: 550.834

BALASHKAND, M. I., FILIPPOV, N. G., YEFIMENKO, M. D., CHEN, O. L., MAYOROV, V. V., KRASNOPOL'SKIY, A. D., SOLODILOV, L. N., YEVDOKIMOV, G. S., Ramenskoye Department of the All-Union Scientific Research Institute of Geophysical Methods of Prospecting

"A Device for Emission of a Seismic Signal"

Moscow, Otkrytiya, Izobreteniya, Promyshlennyye Obraztsy, Tovarnyye Znaki, No 8, Mar 72, Author's Certificate No 330407, Division G, filed 20 Jan 70, published 24 Feb 72, p 142

Translation: This Author's Certificate introduces: 1. A device for emission of a seismic signal. The device contains compressed-air and liquid-fuel supply systems and a pneumatic chamber with movable piston which opens and closes the outlet port of the chamber. As a distinguishing feature of the patent, the compressed-air discharge energy is increased and the heat and force load on the chamber is reduced by fitting the movable piston with atomizers which break up the fuel in the compressed air during gas exhaust and by attaching a device for ignition of the fuel mixture to the chamber housing. 2. A modification of this device distinguished by the fact that

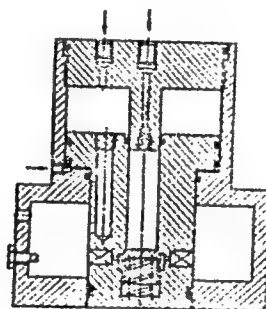
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USSR

BALASHKAND, M. I. et al., USSR Author's Certificate No 330407

the movable piston has a channel filled with fuel and communicating with the atomizer through a check valve, and the cover of the chamber has a rod which enters the channel of the piston and feeds fuel into it through the check valve. 3. A modification of this device distinguished by the fact that the attachment for igniting the fuel mixture is made in the form of a wedge.



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USSR

UDC 539.23+539.103

BARIT, I. YA., BALASHKO, YU. G., DUL'KOVA, L. S., and ZAVARZINA, V. P.

"Using Fine Organic Films in Nuclear Physics Experiments"

Moscow, Probory i Tekhnika Eksperimenta, No 1, Jan-Feb 71,
pp 57-60

Abstract: The experimental work described in this paper was done in connection with measurements of deuteron polarization in ^4He elastic dispersion in the energy range of 1 to 2 Mev. Such organic materials as nitrocellulose, polycaprolactam resin and fiber, and nylon, were subjected to tests for mechanical rigidity and imperviousness to the gas. The most satisfactory materials proved to be polycyromellitimide. Windows of this material were made to enclose helium at a pressure of 140 atmospheres and had to separate this high-pressure gas region from a space with a pressure of less than 10^{-2} atmospheres. The article describes the preparation and testing of the windows and the process of measuring the film thicknesses. There were two such processes: one by passing alpha particles through the film, the other through the shift in maximum (p, d, γ) reaction

1/2

USSR

BARIT, I. YA., et al., Pribory i Tekhnika Eksperimenta, No 1, Jan-Feb 71, pp 57-60

of ^{19}F . A table is given of the change in film thickness, as measured by both these methods, under proton bombardment. There is also a second table comparing the characteristics of films made of various organic substances.

2/2

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1/2 015 UNCLASSIFIED PROCESSING DATE--04DEC70
TITLE--LONG RANGE FORECASTING OF BROWN RUST AND SMUT -U-
AUTHOR--(02)-SHIROKOV, A.I., BALASHONOK, T.G.
COUNTRY OF INFO--USSR
SOURCE--ZASHCHITA RASTENIY, 1970, NR 1, PP 41-42
DATE PUBLISHED-----70

SUBJECT AREAS--BIOLOGICAL AND MEDICAL SCIENCES
TOPIC TAGS--FUNGUS DISEASE, PLANT DISEASE, SEASONAL VARIATION

CONTROL MARKING--NO RESTRICTIONS
DOCUMENT CLASS--UNCLASSIFIED
PROXY REEL/FRA--3007/1347 STEP NO--UR/0433/70/000/001/0041/0042
CIRC ACCESSION NO--AP0136717
UNCLASSIFIED

2/2 015

UNCLASSIFIED

PROCESSING DATE--04DEC70

CIRC ACCESSION NO--AP0136717

ABSTRACT/EXTRACT--(U) GP-0- ABSTRACT. AN EXPERIMENTAL CHECK OF THE METHOD OF LONG RANGE FORECASTING ON THE BASIS OF DATA FOR THE CHELYABINSK REGION IN 1951-1961 SHOWED THAT THE DEVELOPMENT OF BROWN RUST IS DETERMINED BY THE DAILY MEAN TEMPERATURE IN MARCH AND MAY OF THE YEAR BEING PREDICTED. MATHEMATICAL TREATMENT OF DATA FOR 1958-1968 SHOWED THAT IN THESE YEARS THE DECISIVE FACTOR WAS THE MEAN MONTHLY TEMPERATURE IN DECEMBER OF THE PRECEDING YEAR AND FEBRUARY OF THE YEAR UNDER CONSIDERATION. THE AIR TEMPERATURE IN JANUARY AND PRECIPITATION IN MARCH WERE ALSO IMPORTANT. IN THE TROITSKIY REGION CORRELATION WAS OBTAINED BETWEEN RUST DEVELOPMENT AND THE MEAN MONTHLY AND MINIMUM TEMPERATURES IN THE PRECEDING DECEMBER. CORRELATIONS BETWEEN WEATHER OF THE PRECEDING YEAR AND RUST DEVELOPMENT MAY BE ACCIDENTAL, HOWEVER. EXPERIENCE HAS SHOWN THAT THE AMOUNT OF PRECIPITATION IN THE VEGETATION PERIOD (ESPECIALLY JULY) IS MOST IMPORTANT. IMPROVEMENT OF THE SUCCESS OF LONG RANGE FORECASTING WILL REQUIRE FURTHER STUDY OF THE BIOLOGY OF RUST FUNGUS, POSSIBLE MIGRATION ROUTES, AIR CURRENTS, AND EPIPHYTICS IN NEIGHBORING AREAS. FORECASTING OF SMUT IS SIMPLE AND DEPENDS ON THE AMOUNT AND TYPE OF PRECIPITATION IN THE BLOSSOMING PERIOD OF WHEAT IN THE PRECEDING YEAR. FACILITY: OTOEL ZASHCHITY RASTENIY, CHELYABINSKOY SEL'SKOKHOZYAYSTVENNOY OPYTNOY STANTSII, SEKTOR SIGNALIZATSII I PROGNOZOV OBLASTNOY STAZRA.

UNCLASSIFIED

USSR

UDC 632.914:682.285.1/.2

SHIROKOV, A. I., Candidate of Biological Sciences, Head of the Plant Protection Department, Chelyabinsk Agricultural Experimental Station, and BALASHONOK, T. G., Head of the Signaling and Forecasting Section, Oblast Plant Protection Station

"Long-Range Forecasting of Brown Rust and Loose Smut"

Moscow, Zashchita Rasteniy, No 1, 1970, pp 41-42

Abstract: Long-range forecasting of brown rust and loose smut in Chelyabinskaya Oblast is discussed. The late occurrence of these diseases, in late July and early August, indicates that local infectious material does not play the main role in infecting crops in this area. Examination of data for two rayons shows a high correlation coefficient between environmental factors in the preceding period (fall and winter) and the intensity of the disease. This coefficient can sometimes have a random nature, but is regular when the weather in the preceding period affects the accumulation, dormancy and germination of fungus spores. The forecast must be given for the phase of plant development when the disease is at a maximum. In the area under investigation this is the milky ripeness stage.

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USSR

SHIROKOV, A. I., et al., Moscow, Zashchita Rasteniy, No 1, 1970, pp 41-42

It was concluded that in order to compile a long-range forecast with high validity, it is necessary to study the biology of the agent of brown rust, and the possible paths of its migration, which depend on relief, direction of air currents, intensity of development of the disease, and passage through vegetative phases in an adjacent natural climatic zone, and so on. Long-range forecasting of the development of loose smut is quite simple and accurate. Analysis of weather conditions and infection of seedlings showed that the incidence of the disease is determined to a great extent by the amount and nature of precipitation during the flowering of wheat in the preceding year. Thus, the more rain that falls during the flowering period, the more loose smut there will be in the following year.

2/2

1/2 034

UNCLASSIFIED

PROCESSING DATE--27NOV70

TITLE--EXCITON THERMAL REFLECTION IN CADMIUM TELLURIDE -U-

AUTHOR--(04)-BALASHEV, A.A., IVANOV, V.S., KOPYLOVSKIY, B.D.,
STOPACHINSKIY, V.B.

COUNTRY OF INFO--USSR

SOURCE--FIZ. TEKH. POLUPROV. 1970, 4(5), 869-72

DATE PUBLISHED-----70

SUBJECT AREAS--PHYSICS

TOPIC TAGS--EXCITON, HEAT REFLECTION, CADMIUM TELLURIDE, SINGLE CRYSTAL,
SPECTRUM

CONTROL MARKING--NC RESTRICTIONS

DOCUMENT CLASS--UNCLASSIFIED

PROXY REEL/FRAE--3007/0891

STEP NO--UR/0449/70/004/005/0869/0872

CIRC ACCESSION NO--AP0136325

UNCLASSIFIED

2/2 034

UNCLASSIFIED

PROCESSING DATE--27NOV70

CIRC ACCESSION NO--AP0136325

ABSTRACT/EXTRACT--(U) GP-O- ABSTRACT. THE THERMOREFLECTANCE SPECTRA OF N-TYPE CDTE SINGLE CRYSTALS WITH FREE CARRIER CONCN. OF SIMILAR TO 4.5 TIMES 10 PRIME15-CM PRIME3 WERE STUDIED AT 80-140DEGREEK. THE EXCITON EFFECTS MUST BE TAKEN INTO ACCOUNT IN THE INTERPRETATION OF THE EXPTL. DATA, ESP. AT THE LOW END OF THE TEMP. RANGE STUDIED. THEORETICAL ANAL. OF THE SHAPE OF THE THERMOREFLECTANCE SPECTRUM DUE TO EXCITONS SHOWS GOOD QUAL. AGREEMENT WITH THE EXPTL. RESULTS. FACILITY: FIZ. INST. IN. LEBEDEVA, MOSCOW, USSR.

UNCLASSIFIED

USSR

UDC: 8.74

BALASHOV, A. I.

"A Program for Adjusting Trigonometric Nets on the 'Minsk-22' Digital Computer"

Tr. Belorus. in-ta inzh. zh.-d. transp. (Works of the Belorussian Institute of Railway Transportation Engineers), 1971, vyp. 97, pp 71-95 (from RZh-Kibernetika, No 1, Jan 72, Abstract No 1V1054)

Translation: In accordance with the algorithm outlined in the article "Adjusting Trigonometric Nets on the 'Minsk-22' Digital Computer", a program developed by the author is presented together with rules for using it. The program provides for printout on a high-speed remote-control and alphanumeric printer. Author's abstract.

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USSR

UDC 531.14.087.92:621.385.
.832.522:621.386.965

BALASHOV, A. V., and BUKINA, R. A.

"Dissector LI603 in the Capacity of Photoelectric Sensor of a Scanner-Compensator for Measuring of Dislocations"

Electron. Tekhnika. Nauch.-Tekhn. Sb. Elektronoluch. i Fotoelektr. Pribory / Electron Technique. Scientific Technical Collection. Electron Beam and Photoelectric Apparatus /, No 2(20), 1971, pp 47—49 (from Referativnyy Zhurnal, Metrologiya i Izmeritel'naya Tekhnika, No 32. Single Issue No 1, 1972, Abstract No 1.32.369, Resume)

Translation : The principal arrangement of a rapid action scanner-compensator for the measurement of relative linear dislocations of two objects, developed on the basis of the dissector LI603, is described. From basic experimental results, the rapid action of the system could be ascertained and the extent of error of the measurements evaluated.

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1/2 040

UNCLASSIFIED

PROCESSING DATE--23OCT70

TITLE--USE OF GLASS FIBER REINFORCED PLASTICS IN AIRCRAFT FOR CROP DUSTING

-U-

AUTHOR--(05)--SAKALLY, M.TS., GOLUBEVA, L.I., BALASHOV, A.YA., PLATONOVA,
V.N., TELNOV, N.T.

COUNTRY OF INFO--USSR

SOURCE--PLAST. MASSY 1970, (2), 58-9

DATE PUBLISHED-----70

SUBJECT AREAS--MATERIALS, BIOLOGICAL AND MEDICAL SCIENCES, AERONAUTICS,
AGRICULTURE

TOPIC TAGS--CROP DUSTING, AIRCRAFT MATERIAL, GLASS FIBER, REINFORCED
PLASTIC, POLYETHYLENE, PHOSPHATE, CHEMICAL STABILITY, CONTAINER/(U)VPST
GLASS REINFORCED PLASTIC, (U)11ED SM GLASS REINFORCED PLASTIC, (U)PN1
GLASS REINFORCED PLASTIC, (U)EF32 0301 REINFORCED PLASTIC

CONTROL MARKING--NO RESTRICTIONS

DOCUMENT CLASS--UNCLASSIFIED

PROXY REEL/FRA--1997/0663

STEP NO--UR/0191/70/000/002/0058/0059

CIRC ACCESSION NO--AP0119571

UNCLASSIFIED

2/2 040

UNCLASSIFIED

PROCESSING DATE--23OCT70

CIRC ACCESSION NO--AP0119571

ABSTRACT/EXTRACT--(U) GP-0- ABSTRACT. THE CORROSION RESISTANCE OF LOW D. POLYETHYLENE (I) AND OF SEVERAL GLASS FIBER REINFORCED PLASTICS, E.G., VPS-7, 11-ED SM, EF 32-0301, AND PN-1 WAS STUDIED TO DEVELOP A SUITABLE CONTAINER FOR BORDEAUX MIXT. AND SUPERPHOSPHATES (USED FOR CROP DUSTING AND SPRAYING). A VPS-7 CONTAINER (PRESSURE COATED WITH I) HAD SUPERIOR WEAR RESISTANCE AND CHEM. STABILITY. CONNECTING METAL TUBES AND SPRAYING HOSES WERE ALSO REPLACED BY VPS-7 REINFORCED I TUBES.

UNCLASSIFIED

USSR

B
UDC 678.06-419.8:677.5217.004.14:
631.37:656.7

SAKALLY, M. TS., GOLUBEVA, L. I., BALASHOV, A. YA., PLATONOVA,
V. N., TEL'NOV, N. T.

"Utilization of Fiberglass Plastics for Agricultural Aviation
Apparatus"

Moscow, Plasticheskiye Massy, Vol 2, 1970, pp 58-59

Abstract: Because of the fact that metallic units used in air spraying of agricultural fertilizers or toxic agents are corrosive, an attempt was made to find more resistant materials. The authors experimented with fiberglass VPS-7, 11-EDSM, EF 32-301, PN-1 materials and with low density polyethylene. As a result of their work, materials were made from fiberglass VPS-7 to assure strength, and plated with low density polyethylene films to give the desired chemical resistance. In this manner reservoirs for chemical agents and the dispersing arms could be manufactured.

1/1

USSR

531.787

B
BALASHOV, D. B.

"40,000 kg/cm² Metering Pump"

Tr. Metrol. In-Tov SSSR, Vyp. 104(164), [Works of Metrological Institutes of USSR, No. 104(164)], pp 157-160 (translated from Referativnyy Zhurnal Metrologiya I Izmeritel'naya Tekhnika, No. 4, 1970, Abstract No. 4.32.719 by N. I. M.)

Translation: The design of a metering pump for the production of pressure in liquid media, with external variable hydrostatic high pressure cylinder support system and plunger, is described. The high pressure chamber of the metering pump, with volume 32 cm³ and channel diameter 8 cm, has an 8-channel electric lead. The metering pump is designed for the performance of investigations in the pressure area up to 40,000 kg/cm², at temperatures of from 250-600°C. One advantage of the design is the possibility of performing repeated plunger strokes without disassembling the high pressure unit. Including several supplementary operations related to application of preliminary and support pressures, the time required to perform an experiment is somewhat longer than in a metering pump with quasi-hydrostatic support. The dimensions of the metering pump are: height 117 cm, diameter 31 cm, weight 360 kg. One illustration, seven biblio. refs.

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USSR

531.787

BALASHOV, D. B.

"30,000 kg/cm² Metering Pump"

Tr. Metrol. In-Tov SSSR, Vyp. 104(164), [Works of Metrological Institutes of USSR, No. 104(164), pp 150-156 (translated from Referativnyy Zhurnal Metrologiya I Izmeritel'naya Tekhnika, No. 4, 1970, Abstract No. 4.32.718 by M. I. M.)

Translation: A metering pump is described which is designed to produce pressures in liquid media, with quasi-hydrostatic variable external high pressure cylinder support system. The high pressure chamber of the metering pump which has a volume of 28 cm³ and a channel diameter of 2 cm, has a 7-channel electric lead. Tests have shown that the metering pump can produce pressures up to 30,000 kg/cm² quite reliably and is suitable for the performance of investigations in this area of pressures at temperatures up to 600°C. One illustration, 14 biblio. refs.

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USSR

UDC 620.193+539.24

SEMIN, YE. G., SKORIKOV, YE. A., BALASHOV, D. V., DOROFYEV, E. YU., KAL'NIT-SKAYA, E. A., Novocherkassk Polytechnic Institute

"Oxidation Resistance of Fe-Ni-Al-Co-Based Alloys in the Air at 1280°"

Moscow, Zashchita Metallov, Vol 8, No 6, 1972, pp 718-719

Abstract: A study was made of the oxidation resistance of alloys based on Fe-Ni-Al-Co used in the production of permanent magnets in the air at 1280° as a function of the content of the technological additives Co, Ti, Nb, and S. The oxidation products were investigated by x-ray, electron diffraction and metallographic methods using the URS-50IM and the BEIM-1 devices and the MIM-7 microscope. The oxidation of the alloys takes place nonuniformly. The outer layer of the scale is formed of coarse regular crystals elongated perpendicular to the surface. The longer the experiment and the higher the temperature, the larger are the crystals. The inside layer of the scale is formed of small equant grains and is bonded tightly to the metal. The scale becomes thicker when the specimens are held up to 3 hours at 1280°.

The composition of the scales is presented. The oxidation law of the alloys with time is parabolic in the first 10 minutes and then linear, which is connected with continuous destruction of the oxide film. Thus, alloying the

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USSR

SEMIN, YE. G., et al., Zashchita Metallov, Vol 8, No 6, 1972, pp 718-719

Fe-Ni-Al-Co alloys with technological additives has little effect on their corrosion resistance; therefore their thermomagnetic treatment must be carried out in the presence of a protective atmosphere or protective coatings.

2/2

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USSR

UDC: 621.378.325

BALASHOV, I. F., BEREZIN, B. G., and YERMAKOV, B. A.

"Peculiarities in the Generation of Monopulse Radiation With Non-Instantaneous Switching of the Laser Resonator"

Leningrad, Zhurnal tekhnicheskoy fiziki, No 2, 1972, pp 385-390

Abstract: "Instantaneous switching" is defined as a type of laser operation in which the time interval for switching in the resonator is less than the interval required for development of the oscillation to produce maximum monopulse radiation. For obtaining optimal energy characteristics as well as stabilization of the monopulse energy with variations in pumping energy, however, non-instantaneous switching is sometimes desirable. In this paper, the peculiarities of non-instantaneous switching are theoretically and experimentally investigated when the switching is done by an optical-mechanical gate which varies the Q of the resonator. The energy of the monopulse radiation is obtained as a function of the pumping energy for a given type of loss variation from known equations. The experimental part of the work involved the use of a ruby laser and a laser using KGSS-46-2 glass; the effect of displacing the resonator mirror during oscillation development was determined through fast switching by a Kerr gate. The authors

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• USSR

UDC: 621.378.325

BALASHOV, I. F. et al, Zhurnal tekhnicheskoy fiziki, No 2, 1972,
pp 385-390

thank V. A. Berenberg, V. V. Blagoveshchenskiy, and V. A. Telenke-
vich for their participation in the experiments.

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USSR

UDC 669.71.472(088.8)

GEORGIYEVSKIY, YU. I., ZARECHNYY, V. F., BALASHOV, I. I., MANOKHA, I. YE., BUTES,
L. YA.

"Method of Varying the Pole Spacing in an Aluminum Electrolyzer"

USSR Author's Certificate No 273440, Filed 10 Jun 67, Published 21 Sep 70
(from RZh-Metallurgiya, No 4, Apr 71, Abstract No 4G157P)

Translation: A procedure is proposed for varying the pole spacing in an aluminum electrolyzer by vertical displacement of the anode. In order to improve the accuracy of varying the pole spacing, after completion of the command from the control agent to shift the anode downward, a direct current is fed to the stator of the anode drive motor for instantaneous halting of the anode.

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USSR

UDC 669.71.472(088.8)

GEORGIYEVSKIY, YU. I., ZARECHNYY, V. F., BALASHOV, I. I., MANOKHA, I. YE.

"Procedure for Regulating the Operation of Aluminum Electrolyzers"

USSR Author's Certificate No 235337, Filed 14 Jul 67, Published 8 Oct 70
(from RZh-Metallurgiya, No 4, Apr 71, Abstract No 4G155P)

Translation: A procedure is proposed for regulating the operation of Al-electrolyzers by the maximum CO₂ concentration in anodegases by means of an extremal step-by-step search. In order to save electric power, at the beginning of the search a trial shift of the anode downward is made, and in case the CO₂ concentration drops in the anode gases the anode is gradually shifted upward to the maximum value of the CO₂ concentration in the anode gases.

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USSR

UDC 669.71.472(088.8)

GEORGIYEVSKIY, Yu. I., BALASHOV, I. I., ZARECHNYY, V. F., and MANOKHA, I. Ye.

"Method of Determining the Anode Effect on Aluminum Electrolyzers"

USSR Author's Certificate No 272568, Filed 8/07/66, Published 7/09/70
(Translated from Referativnyy Zhurnal-Metallurgiya, No 2, 1971, Abstract No 2 G144 P)

Translation: A method is suggested for determining the anode effect on aluminum electrolyzers. The first derivative of Al yield per current with time is measured in order to predict the anode effect phenomenon, and an approximation of the anode effect is determined from the magnitude and sign of this Al yield.

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USSR

UDC 669.71.011.56(088.8)

GEORGIYEVSKIY, YU. I., ZARECHNYY, V. F., BALASHOV, I. I., MANOKHA, I. YE., and
BOYKO, V. N.

"Device for Calculating Anode Effects During Automated Control of the Operation of Aluminum Electrolyzers"

USSR Author's Certificate No 276442, Filed 13 Sep 67, Published 12 Oct 70 (from
RZh-Metallurgiya, No 4, Apr 71, Abstract No 4G121P)

Translation: The device consists of a regulator and a unit for disconnecting the electrolyzer from the regulator at the anode effect time. In order to prevent anode effects and the consequences on the regulation process, a series-connected anode gas composition sensor and differentiator are introduced into the device. The differentiator output is connected to the electrolyzer regulator control system.

1/1

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USSR

UDC 681.326.35

DOROSHENKO, A. V., MANDRICH, V. G., PETROV, V. Ye., RIRAKHOVSKIY, Yu. V.,
BALASHOV, L. L.

"A Very-Low-Frequency Sinusoidal Voltage Generator"

USSR Author's Certificate No 315259, filed 15 Dec 69, published 9 Feb 72
(from RZh-Avtomatika, Telemekhanika i Vychislitel'naya Tekhnika, No 9,
Sep 72, Abstract No 9A68 P)

Translation: This Author's Certificate introduces a very-low-frequency sinusoidal voltage generator equipped with a master oscillator, a digital-analog converter, and a DC output amplifier. To simplify the circuit of the generator and improve its operational reliability, the digital-analog converter contains a stepped voltage shaper and a shaper for the beginning and end of linear sections. These shaper circuits are interconnected by logic nets and a voltage divider and are connected to the DC output amplifier. Two illustrations.

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USSR

UDC 621.178.372:669.14.018.8

ZOTEYEV, V. S., USTIMENKO, M. YU., GUDKOV, A. A., and BALASHOV, L. V.,
Central Scientific Research Institute of Ferrous Metallurgy

"Static and Fatigue Strength of Alloy KhN40MDTYu (EP543) After Different
Strengthening Modes"

Moscow, Metallovedeniye i Termicheskaya Obrabotka Metallov, No 8, Aug 73,
pp 68-70

Abstract: The effect of plastic deformation and subsequent aging on the static and fatigue strength of alloy EP543 (author's certificate No 172869) was investigated. The alloy had the following chemical composition (in %): 0.04 C (max), 0.8 Si (max), 0.8 Mn (max), 0.02 S (max), 0.035 P (max), 14-17 Cr, 39-42 Ni, 4.5-6.0 Mo, 2.5-3.2 Ti, 0.7-1.2 Al, and 2.7-3.3 Cu (per ChMTU-1-988-70). After standard heat treatment and aging (quench from 1050-1100°C, aged at 750°C for 5-15 hours the tensile strength was greater than or equal to 110 kgf/mm², and yield strength was greater than or equal to 110 kgf/mm², and yield strength was greater than or equal to 65 kgf/mm². Plastic deformation was done by two methods: rolling with completion at 900-925°C, ensuring absence of recrystallization (mode I) and static tension at room temperature (mode II). It was found that the strength

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USSR

ZOTEYEV, V. S., et al., Metallovedeniye i Termicheskaya Obrabotka Metallov,
No 8, Aug73, pp 68-70

of alloy EP543 can be substantially increased by high-temperature deformation with completion at those temperatures when the recrystallization process does not occur and aging (mode I), or by plastic deformation at room temperature (10-20%) (mode II). The most effective treatment was mode I, where fatigue strength is increased by approximately 100% in comparison with the initial alloy state. Three figures, two bibliographic references.

2/2

USSR

UDC: 519.1

BALASHOV, O. M., NOVORUSSKIY, V. V.

"Concerning Conditions of Invariance of an Open System for Control of a Probabilistic Finite Automaton"

Irkutsk, Nekotoryye vopr. optimiz. i upr. v sistemakh energetiki--sbornik (Some Problems of Optimization and Control in Power Engineering Systems--collection of works), 1972, pp 4-10 (from RZh-Matematika, No 9, Sep 73, abstract No 9V440 by A. Muchnik)

Translation: For the finite probabilistic automaton \mathcal{Q} defined by the input alphabet $X = \{x_1, \dots, x_{N-1}\}$ and the output alphabet $Y = \{y_1, \dots, y_{K-1}\}$ with the set of states $A = \{a_1, \dots, a_{M-1}\}$ and the set KN of square $M \times M$ matrices $\|p(a_j u_i / a_i x_s)\|$, where the element $p(a_j u_i / a_i x_s)$ is equal to the probability that the finite probabilistic automaton will go to state a_j after receiving symbol x_s in state a_i , giving symbol y_i at the output, the authors define the inverse finite probabilistic automaton \mathcal{Q}^{-1} (generally speaking, nonuniquely) in the following way: \mathcal{Q}^{-1} induces the probabilistic mapping $\Phi: Q \rightarrow P$, where Q and P are sets of output and input words of automaton \mathcal{Q} respectively and each solution from the set $\{p_i \in \Phi(q_i)\}$, being an argument of the probabilistic

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USSR

BALASHOV, O. M., NOVORUSSKIY, V. V., Nekotoryye vopr. optimiz. i upr. v sistemakh energetiki, 1972, pp 4-10

mapping $\varphi: P \rightarrow Q$ produced by finite probabilistic automaton \mathcal{A} gives the set of solutions $\{q_j = q(p_j)\}$, necessarily incorporating word q_j such that $q_j = q_{j_1}$.

\mathcal{A}' is given by the set KN of matrices $\{q(b_j x_s; a_i y_l)\}$. Each matrix $q(s, l)$ is constructed on the basis of matrix $p(l, s)$ for the pair (y_l, x_s) of automaton \mathcal{A} . The nonzero elements of matrix $q(s, l)$ which designate the probabilities of transitions $q(b_j x_s; a_i y_l)$ are determined by the same indices i, j as the nonzero elements $p(a_i y_l; b_j x_s)$ of matrix $p(l, s)$ of automaton \mathcal{A} . But the values of these probabilities must be determined from supplementary "nonzero" conditions on the inverse finite probabilistic automaton (of the type of minimization of some functional on a set of words or the like). A control system scheme (cf the "open principle") is considered which is a superposition of an inverse finite probabilistic automaton \mathcal{A}' and a finite probabilistic automaton \mathcal{A} . Two problems are solved relative to this scheme.

The first problem consists in finding the probability of appearance of a signal sequence $y^*(t)$ at the output of the circuit if a sequence $z^*(t) \equiv y^*(t)$ has been sent to the input. The second (dual) problem is to

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USSR

BALASHOV, O. M., NOVORUSSKIY, V. V., Nekotcryye voopr. optimiz. i upr. v sistemakh energetiki, 1972, pp 4-10

determine the class of controlling words $z^*(t)$ in relation to which the system is invariant; i. e., it retains them at the output with a probability of no worse than p . Two methods are proposed for solving the first problem, one of which saves time but uses a large memory, and the other saves the memory volume but requires a large number of operations. According to the authors, solution of the second problem is based on solution of the first problem.

3/3

USSR

BALASHOV, O. M. and NOVORUSSKIY, V. V.

"Conditions of Invariance of a Closed Control System for a Probabilistic Finite Automaton"

Nekotoryye Vopr. Optimiz. i Upr. v Sistemakh Energetiki [Some Problems of Optimization and Control in Power Systems -- Collection of Works], Irkutsk, 1972, pp 4-10 (Translated from Referativnyy Zhurnal Kibernetika, No 9, 1973, Abstract No 9V440)

Translation: For a finite probabilistic automaton \mathcal{A} (FPA), defined in input alphabet $X = \{x_0, \dots, x_{N-1}\}$, output alphabet $Y = \{y_0, \dots, y_{K-1}\}$ with set of states $A = \{a_0, \dots, a_{M-1}\}$, by set KN of quadratic $M \times M$ matrices $||p(a_j y_l / a_i x_s)||$, where element $p(a_j y_l / a_i x_s)$ is equal to the probability that the FPA, receiving input symbol x_j while in state a_i will be converted to a_j , producing output symbol y_l , the reverse finite probabilistic automaton (RFPA) \mathcal{A}^{-1} is defined (generally unambiguously) as follows: \mathcal{A}^{-1} induces the probabilistic mapping $\phi: Q \rightarrow P$, where Q and P are the sets of output and input words of automaton \mathcal{A} respectively, where each solution from set $\{p_i = \phi(q_i)\}$, being an argument of the probabilistic map-

1/3

USSR

BALASHOV, O. M. and NOVORUSSKIY, V. V., Nekotoryye Vopr. Optimiz i Upr. v Sistemakh Energetiki, Irkutsk, 1972, pp 4-10

ping $\phi: P \rightarrow Q$, produced by FPA \mathcal{U} , yields the set of solutions $\{q_j = \phi(p_j)\}$ in which word q_j such that $q_j = q_i$ must be found.

\mathcal{U}^{-1} is fixed by the set KN of matrices $||q(b_j x_s / b_i y_l)||$. Each matrix $q(s, l)$ is constructed on the basis of matrix $p(l, s)$ for the pair (y_l, x_s) of automaton \mathcal{U} , where the nonzero elements of matrix $q(s, l)$, representing the probability of transitions $q(b_j x_s / b_i y_l)$, are defined by the same subscripts i and j as the nonzero elements $p(a_j y_l / a_i x_s)$ of matrix $p(l, s)$ of automaton \mathcal{U} . The values of these probabilities must be determined from the supplementary "goal" conditions of the RFPA (such as minimization of a certain functional in a set of words, etc.). The plan of a control system ("open principle") which is a superposition of RFPA \mathcal{U}^{-1} and FPA \mathcal{U} is studied. Two problems are solved concerning this system.

The first problem consists in determination of the probability of appearance at the output of the system of a sequence of signals $y^*(t)$, if the sequence $z^*(t) \equiv y^*(t)$ appears at the input of the system. The

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. USSR

BALASHOV, O. M. and NOVORUSSKIY, V. V., Nekotoryye Vopr. Optimiz i
Upr. v Sistemakh Energetiki, Irgutsk, 1972, pp 4-10

second, double problem consists in determination of the class of control words $z^*(t)$, in relation to which the system is invariant, that is retains them at the output with probability no worse than p . Two methods are suggested for solving the first problem, one of which saves solution time while using much memory, while the other saves memory while requiring many operations. The solution of the second problem, the authors affirm, is based on the solution of the first problem.

A. Muchnik

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USSR

UDC 517.5

BALASHOV, S. K.

"Asymptotic Behavior of Certain Integral Functions of the Exponential Type with Zeros in Spirals"

Moscow, Matematicheskiye Zametki, Vol 14, No 2, 1973, pp 173-184

Abstract: A study was made of the canonical Weierstrass product $\Pi(z)$ of the first type, all the roots of which lie on a spiral with the equation in polar coordinates (r, ϕ) : $\phi = \lambda \ln r$. Under certain additional conditions on the roots, the asymptotic behavior of the function $\lambda_n \{ e^{Az} \Pi(z) \}$ is found (A is a constant) in the complex plane with a discontinuity with respect to the spiral $\phi = \lambda \ln r$. The results are applied to the problem of the sufficient condition for satisfying an inequality for functions of the exponential type used in problems of representing an analytical function by a Dirichlet series.

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USSR

UDC 621.43.011:533;621.5:533

BALASHOV, V. A.

"Stability of Diffusion Jets Formed by Air Streams Under Self-Ballasting of the Fuel by Combustion Products"

V sb. Prom. ustanovki na gaz. toplive (Industrial Gas Fuel Installations -- Collection of Works), Kuybyshev, 1972, pp 74-77 (from RZh-Mekhanika, No 3, Mar 73, Abstract No 3B424)

Translation: The low combustion stability of nozzles formed by air jets in a flow of gas fuel in combination with the difference in the results of the action of ballasting of the fuel by ballast gases, the temperature of the heated air and the combustible medium exclude the effective use of aerodynamic stability and point toward thermal stability. The latter consists of heating up the combustible medium by combustion products. Experimental studies supported the above and provided some foundation for a quantitative evaluation of the recommended method of stabilization. Author's abstract.

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USSR

UDC 669.15.018.8.621.039.5

BALASHOV, V. D., VOTINOV, S. N., PROKHOROV, V. I.

"Influence of Bombardment on Mechanical Properties of Alloys in the System Fe-Cr-Ni"

Radiatsion. Fiz. Tverd. Tela. i Reaktornoye Materialoved. [Solid State Radiation Physics and Reactor Materials Science -- Collection of Works], Moscow, Atomizdat Press, 1970, pp. 101-120. (Translated from Referativnyy Zhurnal Metallurgiya, No. 5, 1971, Abstract No. 5 I812 by Yu. Bychkov).

Translation: In order to study the high-temperature radiation embrittlement of the alloys Kh20N15, Kh20N40, Kh20N60, Kh20N80, and Ni, bombardment was performed in the core of the Sm-2 reactor at 70° to an integral fast neutron flux of $7 \cdot 10^{21}$ cm⁻². The specimens, tested at 20° following bombardment, showed an increase in σ_t of 200-1600% and a decrease in ductility. The temperature of the beginning of high-temperature embrittlement was 600° for Kh20N15 and 500° for Ni. 13 figs; 3 tables; 8 biblio refs.

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UDC 669.15.018.295.621.039.5

BALASHOV, V. D., VOTINOV, S. N., PROKHOROV, Z. I., SHAMARDIN, V. K.

"Change in Strength and Plasticity Characteristics of Iron and Its Alloys With Chromium as a Result of Bombardment"

Radiatsion. Fiz. Tverd. Tela. i Reaktornoye Materialoved. [Solid State Radiation Physics and Reactor Materials Science -- Collection of Works], Moscow, Atomizdat Press, 1970, pp. 94-101. (Translated from Referativnyy Zhurnal Metallurgiya, No. 5, 1971, Abstract No. 5 I811 by O. Pimenova).

Translation: The influence of low-temperature neutron bombardment on the mechanical properties of Armco iron, the alloy Fe-20% Cr, and type Kh13 steel in extension is studied. 6 figs; 8 biblio refs.

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USSR

UDC: 621.039.53

BALASHOV, V. D., VOTINOV, S. N., PROKHOROV, V. I., and SHAFARDIN, V. K.

"Change in Strength and Ductility Characteristics of Iron and its Alloys With Chromium as a Result of Irradiation"

Radiatsion. Fiz. Tverd. Tela i Reaktornoye Materialoved. [Radiation Solid State Physics and Reactor Materials Science -- collection of works], Moscow, Atomizdat Press, 1970, pp 94-101 (translated from Referativnyy Zhurnal Yadernyye Reaktory, No 4, 1971, Abstract No 4.50.141).

Translation: The effect of low-temperature neutron bombardment by the SM-2 nuclear reactor on the mechanical properties of armco iron, iron with 20 wt. % Cr. and type Kh13 chrome steel was studied. The specimens were bombarded in the core of the SM-2 reactor in water at a temperature of about 100° C, with a fast neutron flux density of about 10^{15} (cm²·sec)⁻¹, integral flux $7 \cdot 10^{21}$ cm⁻². After neutron bombardment, the strength was decreased, while ductility was increased in this temperature area in comparison with the nonbombarded material. This indicates that there was no interrupted deformation and indicates a decrease in the hardening factor on the diagrams of bombarded specimens. Both facts qualitatively indicate structural conversions in the material (for example, bonding of carbon with radiation defect), preventing deformation aging following bombardment. It should be

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BALASHOV, V. D., et al., Radiatsion. Fiz. Tverd. Tela i Reaktornoye Materialoved., Moscow, Atomizdat Press, 1970, pp 94-101 (from Referativnyy Zhurnal-Yadernyye Reaktory, No 4, 1971, Abstract No 4.50.141)

noted that whereas in chrome-nickel steels the decrease in ductility following neutron bombardment at high temperatures is sometimes catastrophic, in chrome steels and iron it is not great. 6 figures; 8 biblio. refs.

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USSR

UDC 621.639.53

BALASHOV, V. D., VOTIKOV, S. N., and PROKHOROV, V. I.

"Effect of Radiation on the Mechanical Properties of Alloys in the System Fe-Cr-Ni"

Radiatsion. Fiz. Tverd. Tela i Reaktornoye Materialoved. (Radiation Solid State Physics and Reactor Materials Science -- collection of works), Moscow, Atomizdat Press, 1970, pp 101-120 (from Referativnyy Zhurnal-Yadernyye Reaktory, No 4, 1971, Abstract No 4.50.137)

Translation: This work deals with a study of high-temperature radiation embrittlement of a successive series (with increasing Ni from 15 wt. % to pure nickel) of nickel alloys with chromium based on iron and nickel: Kh20Ni15, Kh30Ni40, Kh20Ni60, Kh20Ni80 and pure nickel. The results of these studies of the effects of high temperature annealing (1050°) indicated that the reduced high temperature plasticity of irradiated specimens is partially restored. This allows us to consider the annealed radiation defects to be a significant factor in the effect of high temperature embrittlement. 12 figures; 8 biblio. refs.

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Welding

USSR

UDC 621.791.053.002.612:658.386

BOTINOV, S. N., KAZENNOV, YU. I., AGAPOVA, N. P., ~~PALICHUK, N. Y.~~ (Candidates of Technical Sciences), PROKHOROV, V. I., REVIZNIKOV, L. I., BOBYLEV, A. P., KRASINA, T. A., KRYLOV, YE. A., BALASHOV, V. D. ZINKOVSKIY, V. I., SYCHEV, R. S. (Engineers)

"Effect of Irradiation on the Properties of Welds of High-Alloy Steels and Alloys"

Moscow, Svarochnoye Proizvodstvo, No 3, Mar 70, pp 4-6

Abstract: The effect of neutron irradiation on the short-term mechanical properties of basic metals and welds from OKh16N15M3B, OKh16N15M3B, and OKh20N40B austenitic steels and LKh132BFR ferrite-martensite steel was investigated. The mechanical properties were determined on samples cut in the longitudinal direction from argon-arc welds using an infusible electrode. The samples were irradiated in the active zone of a reactor at about 100°C. The theoretical neutron flux density was 10^{15} neutron/cm². sec. Some samples received a dose of 2.8×10^{21} neutron/cm², while others received a dose of 4.3×10^{21} neutron/cm². The mechanical properties were determined on UMD-5 tensile testing machines at air temperatures of 20, 350, and 650°C.

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BOTINOV, S. N. et al, Svarochnoye Proizvodstvo, No 3, Mar 70, pp 4-6

Tests conducted at 20°C showed that strength properties of all samples increased after irradiation; plasticity decreased. The tensile and yield strengths of weld metals with an austenitic structure increased to a lesser degree than those of the base metals. The mechanical properties of all samples at 350° did not differ from those of the base metals. A decrease in tensile and yield strength with a simultaneous decrease in plasticity was observed in samples with an austenitic structure in tests conducted at 650°C. These decreases were especially noticeable in irradiated samples made from 40% Ni steel. The possible cause of the sharp decline in the intergrain strength and plasticity observed at 650°C in the irradiated metal with high nickel content is suggested. Orig. art. has: 2 figures, 4 tables, and 5 references.

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Acc. Nr.: AP0047039

Ref. Code: UR0122

USSR

UDC 621.992.4:621.9237:[621.922.025.002.3:661.
65:661.55

BALASHOV, V. M., Engineer

"Thread Grinding by Cubic Boron Nitride Wheels"

Moscow, Vestnik Mashinostroyeniya, No 1, 1970, pp 73-75

Abstract: This article presents an investigation on the use of cubic boron nitride (KNB) wheels for grinding high speed steel threads, conducted at Moscow Technical College, imeni Bauman. Experimental and measurement techniques of wheel wear, the evaluation of productivity and efficiency of grinding process are described. The dependence of the specific wheel wear, wheel productivity, and rigidity on thread pitch, on rotational speeds of the object and wheel, and transverse feed, and also the dependence of wheel rigidity, metal volume removal and specific wear on grinded thread pitch are presented in graphs. The results show that the smallest and the largest wear of KNB wheels were

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observed with P18 and P9F5 steels respectively. Visual observations and the metallographic studies of the surface quality of the thread and its surface layer showed, that there were no burnings and related changes in the layer structure when using the KNB wheels. An analysis of the results shows that the rigidity of KNB wheels is many times higher than the rigidity of the electro-corrundum (white) wheels. It is concluded that the high cutting properties of KNB wheels may be successfully used for thread grinding on steels with increased content of tungsten, cobalt and molibdenum. Original article has 5 figures.

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Glass and Ceramics

USSR

UDC 606.159.212

 BALASHOV, V. N., Candidate of Technical Sciences, All-Union Scientific-Research Institute of Glass Plastics and Glass Fibers

"Calculating the Parameters for Production of Continuous Glass Fiber"

Moscow, Steklo i Keramika, No 7, Jul 70, pp 15-17

Abstract: This article contains a procedure for approximate calculation of the parameters for production of elementary fiber by a continuous process. The limits of the continuous process are defined by the conditions of "brittle" and "liquid" breaking: the relations of tensile strength and stress experienced by the fiber during drawing, the momentum of the liquid (glass mass) and solia particles (glass) per second in the "bulb." Formulas are derived for calculating the parameters, and results are presented for preliminary calculations using data from industrial glass fiber processes. convergence with respect to the nature of the relation of the calculated stresses to the experimental stresses confirms the validity of the procedure for a continuous fiber. It was impossible to confirm the procedure for a hollow fiber in view of the lack of published experimental data. It is pointed out that the practical meaning of the calculated values of stress coefficients is that when producing glass fibers the dynamic stability margin of the process is increased sharply toward the side of preventing breaking in the "bulb" (burning), and it is relatively low for brittle fracture of the elementary fibers.

USSR

UDC 629.78.015.076.8

BALASHOV, V. V.

"Study of Optimal Flights to Mars with Return to the Atmosphere of the Earth at Fixed Velocity"

Uch. Zap. Tsentr. Aerogidrodinam. In-ta [Scientific Writings of Central Aerohydrodynamic Institute], 1971, Vol 2, No 1, pp 82-91, (Translated from Referativnyy Zhurnal, Raketostroyeniye, No 10, 1971, Abstract No 10.41.125, from the Resume).

Translation: The problem is studied of optimizing the trajectories of flights to Mars with a return to the atmosphere of the earth. A method is presented for calculation, based on introduction of a spatial hodograph of heliocentric approach velocity to the sphere of influence of the earth, providing for entry to the atmosphere of the earth at a fixed velocity. The results of calculation of optimal flights lasting one to one and one-half years in 1971-1988 are presented. 6 Figures; 6 Biblio. Refs.

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